



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/327,178	06/07/1999	JIEH-TSORNG WU	EM/WU/4668	5140

7590 02/14/2002

BACON & THOMAS
625 SLATERS LANE
4TH FLOOR
ALEXANDRIA, VA 223141176

EXAMINER

KUMAR, PANKAJ

ART UNIT

PAPER NUMBER

2631

DATE MAILED: 02/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/327,178	WU ET AL.
	Examiner Pankaj Kumar	Art Unit 2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-8 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-8 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

1. DETAILED ACTION

2. *Specification*

3. The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

4. Applicant is reminded of the proper content of an abstract of the disclosure.

5. A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

6. The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

7. Where applicable, the abstract should include the following:

8. if a machine or apparatus, its organization and operation;

9. if an article, its method of making;

10. if a chemical compound, its identity and use;

11. if a mixture, its ingredients;

12. if a process, the steps.

13. Extensive mechanical and design details of apparatus should not be given.

14. Applicant is reminded of the proper language and format for an abstract of the disclosure.

15. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

Art Unit: 2631

16. The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

17. The abstract of the disclosure is objected to because it has a non-narrative list. Correction is required. See MPEP § 608.01(b).

18. The abstract of the disclosure is objected to because part of it is not in english. Correction is required. See MPEP § 608.01(b).

19. The abstract of the disclosure is objected to because of spelling mistakes such as "qnantized" instead of "quantized". Correction is required. See MPEP § 608.01(b).

20. Commas should be at the bottom of a line not at the middle of a line.

21. Hollow o's should not appear in the middle of narratives.

22. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

23. Content of Specification

24. Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

25. Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

26. Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

27. Reference to a "Microfiche Appendix": See 37CFR 1.96(c) and MPEP § 608.05, if the application was filed before March 1, 2001. The total number of microfiche and the total number of frames should be specified. Reference to a "Sequence Listing," a table, or a computer program listing appendix submitted on compact disc and an incorporation by reference of the material on the compact disc.

Art Unit: 2631

28. Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

29. Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

30. Description of the Related Art: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

31. Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

32. Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

33. Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

34. Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet (37 CFR 1.52(b)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

35. Abstract of the Disclosure: A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims.

Art Unit: 2631

36. Drawings: See 37 CFR 1.81, 1.83-1.85, and MPEP § 608.02.
37. Sequence Listing, if on paper: See 37 CFR 1.821-1.825.
38. The claims are objected to because the lines are crowded too closely together, making reading and entry of amendments difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b).
39. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
40. The claims of the disclosure do not commence on a separate sheet. A new set of claims is required and must be presented on a separate sheet, apart from any other text.

41. Claim Rejections - 35 USC § 112

42. The following is a quotation of the second paragraph of 35 U.S.C. 112:
 43. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
44. Claim 1 (and thus claim 2) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Letter h in claim 1 is generally narrative and indefinite, failing to conform with current U.S. practice. It appears to contain grammatical and idiomatic errors.
45. Claim 4 (and thus claims 5,6,7, and 8) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Letter g in claim 4 is generally narrative and indefinite, failing to conform with current U.S. practice. It appears to contain grammatical and

Art Unit: 2631

idiomatic errors. Letter g has the word "our" which looks like a spelling mistake. The word should probably be "out". Letter g also has the word "filter" which looks like a spelling mistake. The word should probably be "filtered". The word "has" seems to be missing before the word "been". Something maybe missing around the word "which".

46. Claim Rejections - 35 USC § 102

47. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

48. A person shall be entitled to a patent unless –

49. (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

50. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hunsinger et al. US pat no. 5465396.

51. Regarding claim 1, Hunsinger shows a new method of digital FM demodulator, comprising:

- a. input the modulation signal (fig. 39: 570) to the delay lines with multiple output (fig. 39: 596, 598);
- b. select one output signal from the multiple output delay lines (fig. 35: 594 and 600 common; 596 and 598 are different);
- c. compare the delayed signal phase with original modulation signal (fig 35: 594 or fig. 39: 594) and accumulate each compared phase difference (fig. 39: analog integration);

Art Unit: 2631

- d. said accumulated phase difference is quantized into one or more bit digital signal (fig. 40: 682);
- e. generate another set of digital signal based on the above accumulated digital signal (fig. 40: 684);
- f. re-select output signal from the multiple output delay lines according to the signal generated in step-e (fig. 40: 544, 556, 558, 546);
- g. repeat the phase comparison and accumulation in step-c , and quantization in step-d , digital accumulation in step-a and re-select output signal from the multiple output delay lines in step-f , again the step-c, d, e, f (see above);
- h. After one cycle of step c-d-e-f , there is one set of digital signal pass to integrator and filter out (col. 6 third full paragraph) the quantized noise by way of a low-pass filter to get the original modulation signal (fig. 42; also see 112 rejection above)

52. Regarding claim 2, the new method of digital FM demodulator as claimed in claim 1 is discussed above. Hunsinger also teaches that said phase difference could convert into voltage or current waveform for accumulation and quantization. (fig: 39; col.6 lines 49-52; col. 8 lines 60-62)

53. Regarding claim 3, Hunsinger shows a new method of digital FM demodulator, comprising:

54. delay input modulation signal by digital controlled delay lines (fig. 39);

Art Unit: 2631

55. compare the delayed rising or falling edge of modulation signal with the original modulation signal by phase detector to generate the phase-leading (fig. 35: 632) or phase-lagging (fig. 35: 634) pulse signal (fig. 35, fig 36a-c);

56. convert the phase difference of said two pulse (fig. 35: 632, 634) into voltage level and stored in capacitor (fig. 37: 642), the voltage difference (fig. 37: output of 640) accumulated in capacitor is equal to the phase difference accumulation (fig. 37);

57. quantize the capacitor voltage into one or more bit digital signal (fig. 37 is part of one embodiment of Hunsinger's invention which has the analog integrator (e.g. capacitor) and fig. 40 is another embodiment of Hunsinger's invention with digital elements); (output of fig. 37 goes to fig. 34 which goes to fig. 35 (which has 618 as the one bit quantizer) which goes back to fig. 37);

58. integrate or accumulate the digital signal by digital integrator to generate another set of digital signal (fig. 40: 682 and fig. 35: 682);

59. put the output signal of digital integrator into the digital controlled delay lines to control the delay time of delayed modulation signal (fig. 40: 684);

60. do a cycle of step b,c,d,e to accumulate a digital signal will generate another set of digital signal which will filter out the high frequency quantized noise (fig. 40: 622 interfering tone) by a low-pass filter to get original modulation signal (see above).

61. Regarding claim 4, see the discussion for claim 3.

62. Regarding claim 5, claim 4 is discussed above. Hunsinger also teaches that said digital controlled delay lines comprises delay units (fig. 40: 558, 546), multiplexer (fig. 40: 618), and

Art Unit: 2631

decoder (fig. 40: 628, 630, 680, 682); each output of delay unit is relative to each input of multiplexer and the delay time of each delay unit is the same (since 546 in fig. 40 is adjustable, we can make the delays the same); the input digital signal after decoding could select the corresponding output signal of multiplexer-, therefore, the delay time of digital controlled delay lines is determined by input digital signal (fig. 40)

63. Regarding claim 6, claim 4 is discussed above. Hunsinger also teaches a new method of digital FM demodulator as claimed in claim 4, wherein the quantizer (fig. 35: 618) and digital integrator (fig. 35: 630) need a trigger signal that could use input modulation signal directly; said phase detector (fig. 35, fig. 36B) will compare the rising edge of input modulation signal and delayed modulation signal and using the falling edge to trigger said quantizer and integrator

64. Regarding claim 7, Hunsinger shows a new method of digital FM demodulator as claimed in claim 4, wherein the said quantizer (fig. 35: 618) could be one or more bit analog-to-digital converter and one bit quantizer (fig. 35: 618) is a voltage comparator.

65. Regarding claim 8, Hunsinger teaches a new method of digital FM demodulator as in claim 4, wherein the said quantizer (fig. 35: 618) and integrator (fig. 35: 630) use same bit number and one bit integrator is a up-down counter (fig. 40:682, col. 26 first full paragraph).

66. Conclusion

67. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (703) 305-0194. The examiner can normally be reached on 8:30 AM to 5:30 PM Monday through Friday.

68. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (703) 305-4378. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

69. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-⁴⁷⁰⁰~~3900~~.

70.

71.

72. PK

73. February 7, 2002


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600
